

NOTES.

M. BAILLAUD, director of the Toulouse Observatory, has been appointed director of the Paris Observatory.

SIR GEORGE DARWIN, K.C.B., F.R.S., has been elected a corresponding member of the Imperial Academy of Sciences of St. Petersburg.

LIEUT.-COLONEL R. E. CROMPTON, C.B., has been elected to the presidency of the Institution of Electrical Engineers vacant by the death of Lord Kelvin.

PROF. BOUCHARD has been elected a vice-president of the Paris Academy in succession to M. Henri Becquerel, who has passed to the presidential chair.

THE Hayden memorial geological medal of the Academy of Natural Sciences of Philadelphia has been awarded to Mr. C. D. Walcott, secretary of the Smithsonian Institution.

WE regret to see the announcement of the death of Lieut.-Colonel R. L. J. Ellery, C.M.G., F.R.S., late Government astronomer and director of the Melbourne Observatory, at eighty years of age.

WE learn from the Paris correspondent of the *Chemist and Druggist* that the appointment of Prof. E. Jungfleisch, of the Paris Superior School of Pharmacy, as successor to Berthelot's chair of organic chemistry at the Collège de France was formally signed by M. Briand on January 6.

THE Geological Society of London will this year award its medals and funds as follows:—Wollaston medal to Prof. Paul Groth, of Munich; Murchison medal to Prof. A. C. Seward, F.R.S.; Lyell medal to Mr. R. D. Oldham; Wollaston fund to Mr. H. H. Thomas; Murchison fund to Miss Ethel G. Skeat; and Lyell fund to Mr. H. J. Osborne White and Mr. T. F. Sibly.

REPORTS have appeared in the daily Press of a new treatment for consumption in which the diseased portion of the lung is removed by operation. The only novelty seems to be the use of hot water or steam to control the hæmorrhage, for excision of a portion of the lung has occasionally been performed during the last seventy years. Such a procedure could only be of service in a very few selected cases.

WE deeply regret to announce the death of Prof. C. D. West on January 10 in Tokyo. He had then been twenty-five years in the service of the Japanese Government, and was one of those men the Japanese did not wish to lose. He never cared to write scientific papers, but his thought can be traced in those written by others. "West's formula" relating to the destructive power of earthquakes is certainly the basis of all other formulæ on this subject, and these have had a wide application. He was a pioneer in the education of engineers in Japan, and is looked up to as the father of engineering in that country. A modest man has been called across the bar.

As the result of a vigorous sanitary campaign, involving an expenditure of more than 40,000l., bubonic plague has now been almost eradicated from San Francisco. One of the most notable features has been the destruction of 130,000 rats during the last four months. Of this number, 11,391 were examined by bacteriologists in the laboratory of the Health Department, and 108 were found to be infected. Up to the end of December, 1907, the total number of persons reported as plague-stricken was 136, of whom seventy-three died. The sanitary measures adopted

have been under the control of an officer of the U.S. Marine Hospital Service, with the cooperation of the local health authorities.

NEW awards will shortly be made from the "Elizabeth Thompson Science Fund," which was established "for the advancement and prosecution of scientific research in its broadest sense," and now amounts to 5200l. Applications for assistance from this fund should be sent promptly, with full information, to the secretary of the board of trustees, Dr. C. S. Minot, Harvard Medical School, Boston, Mass., U.S.A. The trustees are disinclined, for the present, to make any grant to meet ordinary expenses of living or to purchase instruments, such as are found commonly in laboratories. Decided preference will be given to applications for small amounts, and grants exceeding 60l. will be made only in very exceptional circumstances.

IN honour of the memory of the great Russian chemist Mendeléeff, a Congress of Chemistry and Physics was held at the University of St. Petersburg on January 2-12. The congress was organised by the Russian Physico-Chemical Society, and the following telegram, signed by Prof. Borgmann, Rector of the Imperial University, who presided, was sent to Sir James Dewar:—"The Russian Physico-Chemical Society, with members of the first Mendeléeff Congress, express to you—a friend of the late Prof. Mendeléeff—great esteem for your scientific labours opening new ways for investigations of Nature." Many British men of science will be glad that their Russian colleagues have thus shown their appreciation of the greatness of Mendeléeff's work and of the high regard in which his memory is held in this country. This sympathetic feeling and unanimity of aim among scientific men is of international importance, and makes the congress at St. Petersburg an event in which the whole scientific world is interested.

MR. HENRY FARMAN on Monday won the Deutsch-Archdeacon prize by flying toward a goal previously fixed and returning to the starting point, the total distance being more than one kilometre, with a machine heavier than air. The course was marked out by delegates of the Aéro Club of France upon the military ground of Issy. Five hundred metres from the starting point, two posts were placed fifty metres apart, and the conditions of the contest were such that the aeroplane had to pass between these posts in the journeys both out and back. At the starting signal the machine ran along the ground for a few yards and then rose easily in the air and headed toward the turning post. This point was reached by a steady flight, and after sweeping round it, Mr. Farman returned to the starting point with perfect ease. The entire flight occupied 1m. 28s. A description, with an illustration, of Mr. Farman's aeroplane was given in NATURE of December 5, 1907 (p. 106).

AN electrical engineer, M. Lemoine, is under arrest in Paris charged with having obtained more than 60,000l. from Sir Julius Wernher in connection with an alleged invention for the manufacture of diamonds. The "secret" of the process was deposited in a London bank at the time the negotiations were entered upon, and the magistrate appears to be in a legal difficulty, since the defendant refuses to allow the document to be examined. The defendant has, it is reported, given several demonstrations of his process, and some of these were in the presence of witnesses. During the progress of the case, a *Times* correspondent states:—"An Englishman, Mr. Jackson, said that he had been present at two experiments in M.

Lemoine's laboratory. Mr. Jackson himself compounded the substances, put them into a crucible, and sealed it up. M. Lemoine then ran the crucible into an electric furnace, and after about twenty-five minutes he drew the crucible out. Mr. Jackson opened it, and found in it twenty-five little diamonds. At another time they obtained thirty. He offered the diamonds to a London jeweller, who found them very fine, and an expert to whom he showed them thought they came from Jagersfontein." A representative of the *Daily Chronicle* has had an interview with Lord Armstrong, who was present at one of the demonstrations, and affirms that diamonds were really produced. Lord Armstrong is reported to have said:—"M. Lemoine handed me a powder, which, in order to convince myself, I worked up with my fingers. It was nothing but a powder. I myself put this powder into an empty crucible, which I closed again, and I personally put the crucible into the furnace. When, under the instruction of M. Lemoine, who stood some distance from me, and could in no way interfere in the operation, I withdrew the crucible I found in it an agglomerated mass, which I allowed to cool before my eyes. I myself broke this shapeless mass, which presented the appearance of carbonised matter, and there I found these pure diamonds and these other diamonds less perfect." As the case has not yet been decided, it is undesirable to comment upon it at this stage. So far as we have seen the evidence, nothing is added to what has been known by chemists since Prof. Moissan found that diamonds could be produced by allowing carbon to crystallise from solution in molten iron or silver. Prof. Moissan used pure sugar charcoal to obtain his artificial diamonds. This carbon was compressed in a plugged cylinder of soft iron which was placed in a crucible containing iron rendered molten by an electric furnace. The best crystals were obtained when the crucible was afterwards cooled rapidly by immersion in molten lead. As these particulars have been matters of scientific knowledge for the past fourteen years, the Reuter telegram from Paris that the substance of the formula contained in the sealed envelope is as follows, is amusing reading:—"Take carbon of sugar, place it in a crucible, and heat to the requisite temperature. The result will be diamonds."

We have to acknowledge the receipt of a copy of No. 18 of the Bulletin of the Imperial Academy of Sciences of St. Petersburg for 1907, which contains, among other articles, an account by Dr. W. Salensky of the interesting acceolous turbellarian worm *Haplodiscus ussowii*, a species named in 1896.

THE fifth number of vol. ii. of the *Philippine Journal of Science* is almost exclusively devoted to ornithology, no fewer than fourteen out of fifteen articles dealing with this subject. A number of new species (one referable to a new genus) are described, but perhaps the most generally interesting article is one on the rare monkey-eating eagle (*Pithecofaga jefferyi*) from Mindanao and Luzon. None of the specimens was perfect, and no additional information appears to have been ascertained with regard to the habits of this remarkable species.

In *British Birds* for January, Messrs. Bentham and Mouritz record the breeding of the hen-harrier and the hobby in Surrey in 1907. A nest of the former was discovered in May, originally containing four eggs, out of which two were hatched, and in due course the young took wing. Sad to relate, both parents were shot by a gamekeeper, and there is some doubt whether the young birds survived. In the same issue Mr. J. B. Nichols records a specimen of the grey-backed warbler (*Aëdon*

familiaris) shot at Hythe, Kent, in July, 1907, this being the first occurrence of the species in Britain. It breeds in Asia Minor, Turkey, Greece, and further eastwards. The allied rufous warbler (*A. galeatodes*) has occurred thrice in England and once in Ireland.

WHETHER or no they agree with all the opinions expressed, readers of the January number of the *Fortnightly Review* will unite in welcoming an article on "Evolution and Character" by the veteran evolutionist Dr. Alfred Russel Wallace. Despite the absence of any advance in human character during the whole period of which we have any definite ken, such an advance will, in the author's opinion, make itself apparent in the not distant future. It is added, however, that "our imperfect human nature . . . can only make a systematic advance through the thoroughly sympathetic and ethical training of every child from infancy upwards, combined with that perfect freedom of choice in marriage which will only be possible when all are economically equal, and no question of social rank or material advantage can have the slightest influence in determining that choice."

ACCORDING to the latest report of the Liverpool Marine Biology Committee, the Marine Biological Station at Port Erin, Isle of Man, has had a most successful year's work, this being especially the case at sea, where greater activity in submarine exploration than in any previous season was rendered possible by means of a steam-yacht. This yacht, although small, has been fitted with apparatus for dredging, tow-netting, and various other purposes in the comparatively deep water outside the bay, and it is hoped that she may be available for much further exploration in the Irish Sea. The aquarium, to which nearly sixteen thousand visitors were admitted during the summer, continues to be a great success. As regards the economic side of the work, the number of plaice larvæ hatched was considerably below the average, a large percentage of the eggs being infertile. Lobster-culture, on the other hand, made steady progress, although it was found that the experiment of placing the "berried" lobsters in one of the ponds did not prove a success.

A FEW weeks ago we referred to a paper by Mr. Graham Renshaw on the Californian condor (*Gymnogyps californianus*). In the *Century Illustrated Magazine* for January appears an article by Mr. W. L. Finley based on several visits to the actual haunts of the bird, and illustrated with photographs of the egg, young, and adults taken at close quarters. The interviews took place high up in the San Bernadino Range of southern California, and one of the most remarkable events was the near approach the writer and his companion were able to make to the old birds without any manifestations of alarm or fierceness on the part of the latter. These birds, it appears, lay only a single egg in a season, and the young is of remarkably slow development, the black quill-feathers not showing until the nestling is more than two months old. It has been ascertained that there are only forty-one eggs of the species in collections (against about seventy of the great auk), and the number of adult birds in captivity is half a dozen. The photographs obtained during these trips—which include several of the young at different stages of development—are claimed to be absolutely unique.

An example of a plant which sheds its leaves in summer is afforded by *Euphorbia dendroides*. The large yellow bushes which in winter time adorn the Jurassic limestone rocks on the northern shores of the Mediterranean are represented in August by a network of bare brown ramify-

ing stems. In September the new leaves begin to sprout for the winter growth.

PROF. M. C. POTTER records in a leaflet his observations on a barley disease prevalent in the north-eastern counties last year, producing undeveloped grains known locally as "deaf ears." Examination of diseased flowers showed that development had followed a normal course until pollination had taken place, but at this stage arrest of development in the ovary was caused by the attack of the fungus *Helminthosporium gramineum*.

IN the *Verhandlungen des Vereins zur Beförderung des Gewerbflusses*, Berlin, is published the substance of a lecture delivered by Dr. F. Frank before the society on caoutchouc, dealing mainly with its exploitation from natural sources and on plantations, also with the methods of its preparation and the regeneration of old rubber. Reference is made to the development in Mexico of a trade in *guayule*, the substance obtained from the shrub *Parthenium argentatum*, that is worked up in local factories. Special information is furnished with regard to plantations and methods of treating the crude latex of different rubber trees in German colonies in Africa and New Guinea.

IN connection with the problem of natural regeneration of forests in tropical and subtropical climates, an article contributed by Mr. A. W. Lushington to the *Indian Forester* (October, 1907) on sucker reproduction in certain forest reserves and jungle scrub in the Kistna district of Madras points to the importance of this mode of regeneration. The grouping of shrubs of *Bauhinia tomentosa* and *Ormocarpum* suggested that they were not produced from seedlings, and subsequent examination showed that sucker reproduction was the potent factor, not only in the spread of the shrubs, but also of the trees. A note by Mr. Daya Ram in the same number refers to the sporadic flowering of *Strobilanthus Wallichii* and *Strobilanthus alatus* in 1906 in the United Provinces. Previous flowerings were recorded in 1894 and 1882, giving twelve years as the normal life-cycle of these species.

FROM the Royal Botanic Gardens, Kew, we have received the final part (No. 10) of the *Kew Bulletin* for 1907, and appendix v. to the same volume, containing a list of literary contributions by members of the staff during the years 1896 to 1906. In the case of systematic papers, it has been thought useful to add to the title the names of new species. In the Bulletin, Dr. O. Stapf furnishes an account of the gums ammoniac of Morocco and the Cyrenaica. The latter, which is the gum ammoniac described by Dioscorides, is referred to *Ferula marmarica*. The Morocco product has been identified as a variety of *Ferula communis*. The gum ammoniacum of European markets to-day is yielded by the Persian plant *Dorema ammoniacum*, which has ousted the African drug. Mr. W. Dallimore contributes an article on gardens of interest near Newport, Mon., making special reference to tree cultivation. In another article attention is directed to Zapepe fibre, the product of an undetermined species of *Agave* that is proposed as an alternative to the sisal *Agave* in tropical countries such as the West Indies.

THE report of the early proceedings at the West Indian, Agricultural Congress, held in Jamaica in January, 1907, together with the papers that would have been read but for the earthquake, has been published in the *West Indian Bulletin* (vol. viii., parts i. and ii.). A review of the year's work in connection with the more important agricultural industries was presented by Sir Daniel

Morris in his presidential address. On the subject of sugar canes, Mr. J. R. Bovell and Mr. F. A. Stockdale discuss new seedling varieties and the methods of obtaining hybrids. Artificial cross-fertilisation offers so many difficulties that other methods, such as planting alternate rows of two selected varieties throughout a plot, have been adopted. Cacao, pine-apples, limes, and cotton provided the subjects for several papers. With regard to varieties of rubber, it is noticeable that Castilloa has received more attention than Hevea. Mr. B. H. Jones, writing about the collection of rubber in the forests of British Guiana, makes special reference to three indigenous species of *Sapium*.

A RETURN of the frost occurred during the past week over the whole of England, and in many places the thermometer fell as low as in the severe frost in the early part of the month. At Greenwich the thermometer in the screen registered 19°.1 on the morning of Saturday, January 11, while on the grass the temperature was 11°.1, and on Sunday the shade reading was 17°.9, which is in agreement with the lowest temperature in the earlier frost, whilst the exposed thermometer fell to 8°.8, which is more than a degree lower than during the previous frost. Among the lowest temperatures reported to the Meteorological Office on Sunday, January 12, were:—18° in the screen at Bath and Oxford, 19° at Nottingham, 20° at Dover, and 22° at Dungeness.

IN the Bulletin of the Italian Geographical Society (1907, pp. 738-745) Prof. L. Palazzo, director of the Italian Meteorological Service, under the title "I brontidi del Bacino Bolsenese," gives an interesting account of the mysterious phenomenon generally known as "*mist-poeffers*," or in English as barisal guns, from its occurrence in the delta of the Brahmaputra. The paper is compiled from reports supplied by persons living on the shores of the lake of Bolsena (Latium) and adjacent parts, and deals with the sonorous character of the phenomenon, its frequency, and the accompanying meteorological conditions. The sounds generally appear to come from the shores of the Tyrrhenian Sea, about twenty-four miles distant from the lake; the description of them agrees entirely with reports from other parts, and with the accounts published by Van den Broeck, Günther, and others. The paper contributes much information on the subject, but throws no additional light upon the physical cause of the phenomenon, whether the origin be aerial or subterranean (see NATURE, vol. lii., p. 650, and vol. liii., p. 4).

IN the Proceedings of the American Antiquarian Society, vol. xviii., Prof. A. L. Rotch makes a timely publication of Franklin's descriptions of the first balloon ascents. These interesting documents consist of five copy-press letters written to Sir J. Banks, P.R.S., in 1783, when Franklin was Minister to the French Court. One of them probably has never before been published; the others are little known, although printed, with some alterations, in the editions of Franklin's works by Bigelow in 1888 and Smyth in 1906. The first ascent was made from the Champ de Mars on August 27, 1783; the balloon was filled with hydrogen, and was capable of lifting a weight of 39 lb.; about 50,000 people assembled to see the experiment. The second ascent was a hot-air balloon from Versailles, apparently in September; it carried a sheep and some poultry. The first and second manned balloons ascended on November 20 and December 1, 1783, filled with hot air kept up by burning straw and by "inflammable air" respectively; both experiments were successful. Referring to the first manned ascent, Franklin

wrote:—"I am sorry this Experiment is totally neglected in England where mechanic Genius is so strong. . . . Your Philosophy seems to be too bashful. . . . This Experience is by no means a trifling one. It may be attended with important Consequences that no one can foresee."

THE most noteworthy article in the Journal of the Franklin Institute for December, 1907, is that by Prof. J. W. Richards reviewing the progress made in the electro-thermic production of iron and steel. There is also a paper by Mr. E. S. Cole describing the pitometer, an ingenious instrument for measuring the leakage of water in mains.

THE current issue of the *Central*, the organ of the Central Technical College Old Students' Association, contains as a frontispiece an excellent portrait of Prof. W. E. Dalby. There is also an article by Prof. H. E. Armstrong on the nature of chemical change, in which he reviews the excellent research work accomplished by the chemical department of the college since 1885.

At a meeting of the Association of Engineers in Charge held in London on December 11, 1907, Mr. L. Gaster read a paper on the province of the illuminating engineer, in which he directed attention to the waste which is going on in the conversion of energy into light, and to the utilisation of the illuminants so as to produce the best illumination. He suggested a method for reducing the existing waste, and indicated some of the important problems with which the illuminating engineer has to deal.

A BATCH of publications received from the Department of Mines of Queensland affords striking evidence of the excellent work that is being done by the Geological Survey in investigating the mineral resources of the colony. Mr. B. Dunstan (Publication No. 207) describes some copper, gold, and bismuth mines in the Burnett district, west of Maryborough. Mr. L. C. Ball (No. 208) gives a careful report on the Norton goldfield, where gold was discovered in 1871, the total yield since then having amounted to 16,630 ounces. The reefs have hitherto been worked for their gold and silver contents, and the returns would, but for the complex sulphides in the ore, have given a profit. If a suitable method of treating these sulphides were adopted, many reefs hitherto neglected would probably be opened up. Mr. W. E. Cameron (No. 209) describes some goldfields of the Cape York Peninsula. The same author (No. 210) gives an exhaustive account, illustrated by a map and fourteen admirable plates, of the Annan River tinfield, Cooktown district. He shows that rich alluvial tin occurs at numerous points over an area twelve miles long by eight miles broad. Recently, hydraulicing the face with water under pressure has been adopted, and an attempt has been made to deal with the deposits by machinery by dredging the alluvial flats. Mr. B. Dunstan (No. 211) describes the Stanhills tinfields near Croydon, where recent operations have revealed ore of exceptionally rich quality, and the field has become very active. The tin is found in lodes and in alluvial deposits, and the area of the field amounts to about 100 square miles. Mr. B. Dunstan also publishes a further report (No. 212) on some Croydon gold-mines, with special reference to Bennion's reef and to the Highland Mary reef. Publication No. 213 is a map, on a scale of six miles to the inch, of the copper-mining district of Cloncurry, compiled by Mr. L. C. Ball.

To the Bulletin of the American Mathematical Society, xiii., 10, Prof. Cleveland Abbe contributes a short note on the possibility of studying the movements of the atmo-

sphere by laboratory experiments with projections of a globe. It being necessary to use flat models, the conditions are necessarily different from those on our earth, and the author discusses the projections of the sphere best suited for taking account of different effects.

THE Transactions of the American Mathematical Society (viii., 4) contain a paper by Prof. A. G. Greenhill, F.R.S., on the elliptic integral in electromagnetic theory. The investigation was undertaken during the lifetime of the late Principal Viriamu Jones, F.R.S., in connection with the calculation of the mutual attraction of two coaxial helices employed in the ampere balance designed by Principal Viriamu Jones and Prof. Ayrton. The object is to exhibit the third complete elliptic integral in the form most suitable for computation.

IN the *Revue générale des Sciences* (November 30, 1907) M. Th. Reinach publishes, with an introduction by Prof. Painlevé, a translation of the manuscript of Archimedes discovered in 1899 by Papadopoulos Kerameus on a palimpsest parchment. This manuscript soon attracted the attention of Profs. H. Schoene and Heiberg, and the latter visited Constantinople in 1906 to study the precious document. It consists of four parts, some containing works already known, and the present article deals with the fourth, namely, the treatise on method (Ephodos), which is dedicated to Eratosthenes. It deals with the quadrature of a parabola, and with the volumes and centres of gravity of spheres, ellipsoids, paraboloids and hyperboloids of revolution, and the "method of exhaustion" adopted by Archimedes distinctly anticipates its modern equivalent of integration. A further interesting feature of the problem is Archimedes' use of the principle of the lever in comparing different solids of revolution by a kind of method of balancing the elements of one against the corresponding elements of the other.

IN the *Verhandlungen der deutschen physikalischen Gesellschaft* for November 30, 1907, Drs. U. Behn and H. Geiger give 1-63 as the result of their determination of the ratio of the specific heats of helium at constant pressure and at constant volume respectively. Their method is a modification of Kundt's. The tube containing the gas is sealed at both ends, and is clamped in the middle. Its frequency for longitudinal oscillations is adjusted by attaching metal discs to the ends with sealing wax, until the lycopodium within is set in motion by the resonance of the gas. One end of the helium tube projects in the usual way into a second tube containing air, and produces dust figures in the air from which the frequency of the oscillation is calculated.

PART vii. of vol. xxi. of the Journal of the College of Science of the University of Tokyo consists of an account of the work done by Messrs. K. Honda and T. Terada on the reciprocal relations of stress and magnetisation in a number of irons and steels. The specimens, in the form of wires, were magnetised under tension in a vertical magnetising coil, and the induction was measured ballistically both with change of stress at constant field and with change of field at constant stress. The result is a verification of the theories of Prof. J. J. Thomson and others so far as the principal effects are concerned, but hysteresis effects appear to make it impossible to test experimentally the correctness of the terms of the second order, in which the theories differ from each other.

A MEMOIR by Miss E. M. Elderton, Galton research scholar in national eugenics of the University of London, assisted by Prof. Karl Pearson, on the resemblance between first cousins, has been issued by Messrs. Dulau and Co. The memoir gives the results of two series of investiga-

tions, the first dealing mainly with qualitative characters—such as health, ability, temper, temperament, and success in life—the second, not yet completed, with certain measurements on the hand, eye-colour and hair-colour, as well as health.

In the current number of *Science Progress*, published by Mr. John Murray at five shillings net, there are several articles of interest on applied science. In the first place we notice a paper by Dr. J. S. Haldane, F.R.S., on work under pressure and in great heat, giving a very good *précis* of the author's researches in this department, which have altered the Admiralty practice as regards diving, and should alter the factory-mining regulations, when these well-meant rules are inspired by knowledge as well as good intention. The article by Dr. F. H. A. Marshall, on nutrition and fertility, touches on matters of great importance to breeders of stock, and furnishes a curious (and unintentional) commentary on the work of Prof. Chittenden on the minimum of food-stuffs. Articles that also call for mention are those of Prof. Halliburton on the repair of a nerve, and Mr. A. D. Darbishire on Mendelism. A fine portrait of the late Lord Kelvin appears as frontispiece.

AMONG the subjects of lantern-slides from photographic negatives, in the supplementary list just issued by Messrs. Newton and Co., are:—steel-making, showing operations at a great steel-works; coal-mining; wild life; pathological tissues; animal life in earlier times; eruption of Vesuvius in 1906; bacteriology of tropical diseases; and colour photography. The slides should be of real service in illustrating popular lectures upon scientific subjects.

THE old students of the Finsbury Technical College are to be congratulated on the first number of the magazine produced and published by their association. The cover of the magazine carries a medallion portrait of the principal of the college, Prof. Silvanus P. Thompson, F.R.S., and a portrait of the first president, Dr. M. O. Forster, F.R.S., forms a supplement. The reading matter includes a greeting from Prof. J. Perry, F.R.S., in which he refers to reformed methods of teaching mathematics and physical science.

THE tenth issue, that for 1908, of "Wellcome's Photographic Exposure Record and Diary," will prove of assistance to photographers. Much useful guidance is provided, and the mechanical calculator attached to the cover will be found serviceable. In addition to a complete diary for 1908, the book also contains tables for interior work, telephotography, copying, enlarging and reducing, moving objects, night photography, and for printing by artificial light. Three editions, adapted respectively to the conditions of various latitudes, are published, and the price of the volume is one shilling.

WE have received a copy of the first number of a new monthly technical magazine entitled the *Illuminating Engineer*, which is to be devoted to the subject of scientific illumination. The periodical is edited by Mr. Leon Gaster, and the price of each issue will be 1s. The first number, which runs to eighty-eight pages, contains a variety of articles and notes, some of which are well illustrated. Prof. J. A. Fleming, F.R.S., describes vacuum tube electric lighting; Dr. C. V. Drysdale deals with the production and utilisation of light; Mr. A. P. Trotter discusses the distribution and measurement of illumination; and Dr. Hugo Krüss gives an account of some researches on reflected transmitted light. The new periodical should appeal to all engineers concerned with illumination.

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OUR ASTRONOMICAL COLUMN.

COMETS DUE TO RETURN THIS YEAR.—In No. 392 of the *Observatory* (January), Mr. W. T. Lynn publishes a number of particulars concerning the periodical comets due to return during the present year. The first named is that discovered by M. Giacobini in December, 1900, and found to have a seven-year period.

The comet discovered by Mr. Denning on October 4, 1881, has, according to the calculated elements, a period of 8.8 years. In 1890 and in 1898-9 its position was not favourable for observation, so there is a likelihood of its being re-discovered in the early part of this year.

Encke's comet has been observed at every return since it was recognised as a periodic comet in 1819, and has already been found by Prof. Max Wolf. The comet discovered by Tempel in 1869 November 27, and recognised as periodical by Swift in 1880, should reappear during the coming summer; its period was found to be a little greater than $5\frac{1}{2}$ years. It was not seen in 1903, when it was last due, or in the preceding return of 1897, but was well observed in 1891.

DETERMINATION OF THE MOON'S LIGHT WITH A SELENIUM PHOTOMETER.—Some interesting results, accruing from preliminary experiments on the determination of the amount of light received from the moon at different phases, by means of selenium cells, are published in the December (1907) number of the *Astrophysical Journal* (vol. xxvi., No. 5, p. 326) by Messrs. J. Stebbins and F. C. Brown.

The moonlight was compared with the light of a standard candle burning under known conditions, the values obtained being subsequently reduced by correcting for atmospheric absorption, &c. For the light given out by the full moon the observers derived a value of 0.209 candle-power, but other cells employed gave different values, the mean value being very near to the 0.23 candle-power adopted by Müller as the mean obtained from visual observations.

The results show that at full moon we receive about nine times as much light as at half moon, and they also indicate that the moon is brighter between first quarter and full than in the corresponding phase after full moon. Observations made during the partial lunar eclipse of July 24, 1907, gave the instant of least light as 16h. 23m., whilst according to the *American Ephemeris* it was 16h. 24m.

The differences obtained by using different cells are probably due to the fact that the cells are not equally colour-sensitive, and to this point the authors propose to pay considerable attention; presumably the question of colour would not enter into the determination of the values at various phases when the same cell was employed throughout.

THE APPEARANCE OF NEPTUNE IN SMALL TELESCOPES.—A paper recently communicated by Mr. Holmes to the British Astronomical Association gave rise to an interesting discussion at the November (1907) meeting. The question discussed was the planetary appearance of Neptune in small telescopes, and whilst some of the members averred that it was difficult to recognise the disc with a 6-inch telescope, others, including Mr. Maw, stated that they had found such an instrument sufficiently large for this observation. The general result of the discussion appears to have been the conclusion that some of the earlier descriptions of the size and brightness of the disc of Neptune are misleading, although the form should be clearly recognised with an instrument of equivalent power to a 6-inch achromatic telescope (the *Observatory*, No. 392, p. 47).

THE "ANNUAIRE ASTRONOMIQUE" FOR 1908.—The excellent year-book of astronomy and meteorology issued by M. Flammarion is one of the most useful of its type and price to the amateur astronomer who reads French. It contains practically all the data he is likely to require in his work, besides a valuable annual review of the progress of astronomy. Many of the notes and directions are illustrated, and, in addition to the diary giving the astronomical phenomena for each day of the current year, there is a map of the sky for different times and dates in each month. The price of the volume is 1.50 francs.